

## CLAIMS

What is claimed is:

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1. A method for wirelessly communicating data between a plurality of avionics units on an aircraft and a data communication apparatus, said method comprising:

wirelessly communicating download data for one said avionics unit from the data communication apparatus from an aircraft data services link in the aircraft;

electronically switching a communication path from said aircraft data services link to said avionics unit responsive to said download data; and

electronically communicating said download data from said data communication apparatus to said avionics unit via said electronically switched communication path.

2. A method in accordance with Claim 1 wherein said wirelessly communicating download data comprises wirelessly communicating said download data via a wireless spread spectrum link.

3. A method in accordance with Claim 1 further comprising electronically communicating fault information pertaining to said download data from said avionics unit to said aircraft data services link via an electronically switched

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communication path, and wirelessly communicating said fault information from said aircraft data services link to said data communication apparatus.

4. A method in accordance with Claim 1 further comprising electronically communicating aircraft performance data from an aircraft condition monitoring system on said aircraft to said aircraft data services link, and wirelessly transmitting said aircraft performance data from said aircraft data services link to said data communication apparatus.

5. A method in accordance with Claim 4 further comprising said aircraft condition monitoring system obtaining said aircraft performance data via an electronic communication from at least one member of the group consisting of an aircraft communication and reporting system on said aircraft, a maintenance control display unit on said aircraft, and a digital flight data acquisition unit on the aircraft

6. A method in accordance with Claim 1 wherein said electronically switched communication path comprises an ARINC 429 bus.

7. A method in accordance with Claim 1 wherein said download data comprises an ARINC 615 or ARINC 615A compliant data.

8. A method in accordance with Claim 1 wherein said download data comprises flight operations quality assurance data.

9. A method for wirelessly communicating data between a plurality of avionics units on an aircraft and a data communication apparatus, said method comprising:

electronically switching a communication path from one said avionics unit to an aircraft data services link in the aircraft;

electronically communicating data from said avionics unit to said aircraft data services link via said electronically switched communication path; and

wirelessly communicating said data from said aircraft data services link to said data communication apparatus.

10. A method in accordance with Claim 9 wherein said electronically switched communication path comprises an ARINC 429 bus.

11. A method in accordance with Claim 9 further comprising electronically communicating aircraft performance data from at least one member of a group consisting of

an aircraft condition monitoring system on said aircraft,  
a maintenance control display unit on said aircraft, and  
a digital flight data acquisition unit

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to said aircraft data services link, and wirelessly transmitting said aircraft performance data from said aircraft data services link to said data communication apparatus.

12. A method for wirelessly communicating data between a plurality of avionics units on an aircraft and a data communication apparatus, said method comprising:

electronically switching a communication path from one said avionics unit to an aircraft data services link in the aircraft;

electronically communicating data from said avionics unit to said aircraft data services link via said electronically switched communication path; and

wirelessly communicating said data from said aircraft data services link to said data communication apparatus.

13. An apparatus for wirelessly communicating data between a plurality of avionics units on an aircraft and a data communication apparatus external to the aircraft, said apparatus comprising, onboard an aircraft:

an aircraft data services link having a processor, means for wirelessly transmitting and receiving data to and from a data communication apparatus external to the aircraft, and an electronic switch;

a plurality of avionics units coupled to said remotely controllable switch;

wherein said processor is responsive to data received from the data communication apparatus via said means for wireless transmitting and receiving

to control said electronic switch to selectively couple said avionics units to said aircraft data services link to provide data communication between a selectively coupled avionics unit and the data communication apparatus via said aircraft data services link.

14. An apparatus in accordance with Claim 13 wherein said means for wireless transmitting and receiving comprises an IEEE 802.11 transceiver.

15. An apparatus in accordance with Claim 13 wherein said means for wireless transmitting and receiving comprises a spread spectrum receiver and transmitter.

16. An apparatus in accordance with Claim 13 wherein said means for wireless transmitting and receiving comprises an IEEE 802.11a receiver and transmitter.

17. An apparatus in accordance with Claim 13 wherein said means for wireless transmitting and receiving comprises an amplitude modulation receiver and transmitter.

18. An apparatus in accordance with Claim 13 further comprising an aircraft condition monitoring system on the aircraft, said aircraft condition monitoring system electronically coupled to said aircraft data services link,

wherein said processor is responsive to data transferred from said aircraft condition monitoring system to said aircraft data services link and configured to schedule wireless transmission of said data transferred from said aircraft condition monitoring system to the data communication apparatus.

19. An apparatus in accordance with Claim 18 further comprising at least one member of the group consisting of an aircraft communication and reporting system on the aircraft, a maintenance control display unit on said aircraft, and a digital flight data acquisition unit on the aircraft, and wherein said at least one member is operatively coupled to said aircraft condition monitoring system to communicate information to data communication apparatus wirelessly via said aircraft data services link.

20. An apparatus in accordance with Claim 13 wherein at least two of said plurality of avionics units coupled to said remotely controllable switch are coupled to said remotely controllable switch via A429 busses.

21. An apparatus in accordance with Claim 13 wherein said aircraft data services link is configured to communicate ARINC 615 compliant data to at least some of said avionics units.

22. An apparatus in accordance with Claim 21 wherein said aircraft data services link includes a memory coupled to said processor, and said processor is

configured to maintain a database in said memory containing version identifiers of software in said avionics units, and to update said database when data transmitted from said data communication apparatus is communicated to an avionics unit via said aircraft data services link.

23. An apparatus in accordance with Claim 13 configured to wirelessly download flight quality assurance data.

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24. An apparatus for wirelessly communicating data between a plurality of avionics units on an aircraft and a data communication apparatus external to the aircraft, said apparatus comprising, onboard an aircraft:

an aircraft data services link having a processor and means for wirelessly transmitting to a data communication apparatus external to the aircraft;

a plurality of avionics units coupled to said remotely controllable switch;

wherein said processor is responsive to data received from the data communication apparatus via said means for wireless transmitting and receiving to control said electronic switch to selectively couple said avionics units to said aircraft data services link to provide data communication between a selectively coupled avionics unit and the data communication apparatus via said aircraft data services link.

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